

REMARKS

I. INTRODUCTION

In response to the Office Action dated April 11, 2006, no claims have been canceled, amended or added. Claims 1-12 remain in the application. Entry of these remarks, and re-consideration of the application, is requested.

II. PRIOR ART REJECTIONS

A. The Office Action Rejections

In paragraphs (3)-(11) of the Office Action, claims 1, 2, 5, 6, and 9-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sicher, U.S. Patent No. 6,385,195, in view of Frid, U.S. Patent No. 6,137,791. In paragraphs (12)-(14) of the Office Action, claims 3, 4, 7, and 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sicher, in view of Frid, and further in view of Olkkonen, PCT Published Application No. WO 98/43456.

Applicants' attorney respectfully traverses these rejections.

B. Applicants' Independent Claims

Applicants' independent claim 1 is generally directed to an internet protocol-based cellular telephone communications system, comprising:

a router;

a foreign agent (FA), coupled to the router;

a base transceiver station (BTS), coupled to the router, for communicating with a mobile telephone within a transmission area associated with the base transceiver station, wherein the router communicates with the base transceiver station using a cellular network interface; and

a home agent (HA), coupled to the router, wherein the home agent communicates with the router and the foreign agent for registering mobile telephones and transmitting messages using an internet-protocol network separate from the cellular network;

wherein messages are transmitted using the internet protocol network between the home agent and the router, and messages are transmitted using the cellular network interface between the router and the base transceiver station.

Applicants' independent claim 6 is generally directed to an internet protocol-based cellular telephone communications system, comprising:

a handoff server (HS);

a base transceiver station (BTS), coupled to the handoff server, for communicating with a mobile telephone within a transmission area associated with the base transceiver station, wherein the handoff server communicates with the base transceiver station using a cellular network interface; and

a home agent (HA), coupled to the handoff server, wherein the home agent communicates with the handoff server for transmitting messages using an internet-protocol network separate from the cellular network;

wherein messages are transmitted using the internet protocol network between the home agent and the handoff server, and messages are transmitted using the cellular network interface between the handoff server and the base transceiver station.

Applicants' independent claim 12 is generally directed to a method for communicating over an internet protocol-based communications network, comprising:

sending a message from a home agent (HA) to a router over an internet protocol based network;

forwarding the message from the router to a base transceiver station (BTS) using a cellular network interface, wherein the cellular network is not part of the internet protocol based network; and

forwarding the message from the base transceiver station to a mobile telephone that is within a geographical communications zone of the base transceiver station.

C. The Sichter Reference

Sichter describes an enhanced interworking function for interfacing digital cellular voice and fax protocols and internet protocols. An enhanced interworking function (E-IWF) supports a method of direct digital interworking between a radio telecommunications network and standard Internet Protocol (IP) routers. A general purpose interworking function performs speech transcoding and data interworking. A specific translation interworking function translates directly between mobile-specific voice encoding and Voice-over-IP protocols, and between mobile-specific fax encoding and Fax-on-IP protocols. The method provides interworking between cellular protocols in a time division multiple access (TDMA) cellular telecommunications network, and Internet protocols being utilized by an Internet End-System (ES) or fax gateway.

D. The Frid Reference

Frid describes communicating packet data with a mobile station roaming within an incompatible mobile network. It is also a roaming mechanism enabling a mobile station to roam between a first data packet network utilizing a Mobile IP Method (MIM) and a second data packet network utilizing a Personal Digital Cellular Mobility Method (PMM) is disclosed. A foreign agent (FA) is introduced into the PMM network for enabling a mobile station associated with the MIM network and currently roaming within the PMM network to communicate packet data with an associated home agent (HA). A home agent (HA) is further introduced into the PMM network for enabling a mobile station associated with the PMM network and currently roaming within the MIM network to communicate packet data with an associated FA or Mobile IP Client Emulator (MICE) currently serving the roaming mobile station.

E. The Olkkonen Reference

Olkkonen describes a mobile telecommunications network using ATM switching, which has a network element including an ATM switching function, which are controlled with same call and switching control operations as generally used for control of TDM switching field

F. Applicants' Claimed Invention Is Patentable Over The Reference

Applicants' attorney respectfully submits that Applicants' claimed invention is patentable over the cited references. Specifically, Applicants' attorney asserts that the references, taken individually or in combination, do not teach or suggest the specific combination of elements recited in Applicants' claims.

Neither Sicher nor Frid disclose messages being transmitted between a home agent, a router and a foreign agent using an IP network separate from the cellular network

With regard to Applicants' independent claim 1, the cited portions of Sicher and Frid do not describe the combination of a router that communicates with a mobile telephone via a base transceiver station, wherein the router communicates with the base transceiver station using a cellular network interface, and a home agent that communicates with the router and a foreign agent for registering mobile telephones and transmitting messages using an internet-protocol network separate from the cellular network, wherein messages are transmitted using the internet protocol

network between the home agent and the router, and messages are transmitted using the cellular network interface between the router and the base transceiver station.

Similarly, with regard to Applicants' independent claim 12, the cited portions of Sicher and Frid do not describe the combination of sending a message from a home agent to a router over an internet protocol based network; forwarding the message from the router to a base transceiver station (BTS) using a cellular network interface, wherein the cellular network is not part of the internet protocol based network; and forwarding the message from the base transceiver station to a mobile telephone that is within a geographical communications zone of the base transceiver station.

The Office Action asserts that the mobile switching center (MSC) of Sicher is a router and the MSC communicates with the BTS using a cellular interface. However, the Office Action admits that Sicher does not expressly disclose a foreign agent (FA), coupled to the router, and a home agent (HA), coupled to the router, wherein the home agent communicates with the router and the foreign agent for registering mobile telephones and transmitting messages using an internet-protocol network separate from the cellular network; wherein messages are transmitted using the internet protocol network between the home agent and the router.

Nonetheless, the Office Action asserts that Frid teaches a home agent communicating with the router and a foreign agent for registering mobile telephones and transmitting messages using an internet-protocol network separate from the cellular network, at col. 1, lines 48-53; col. 6, lines 41-43; and col. 7, lines 15 - 20.

However, col. 7, lines 15-20 of Frid indicates that the router, home agent and foreign agent do not use an internet-protocol network separate from the cellular network:

Frid: Col. 7, lines 15-20 (actually, lines 9-20)

The mobile station 20 initiates a data session by requesting packet data communication with the serving BS 30. The BS 30 then forwards the request through the serving VMSC 40 to an associated foreign agent and serving router (FA/SR) 310. The FA/SR 310 then analyzes the IP address transmitted by the traveling mobile station 20 and determines a home agent 320 associated therewith. The HA 320 is a packet data communication node for keeping track of the mobile station's current location and for performing gateway function for receiving and routing incoming packet data. The FA 310 then communicates with the identified HA 320 to establish an IP tunnel 330 therebetween.

As is well known in the art, "tunneling" is a method of transmission over networks based on differing protocols. In tunneling, a message based on one protocol is wrapped, or encapsulated, in a message based on whatever differing protocol is needed in order for it to travel over the network.

Thus, when Frid describes setting up an "IP tunnel" between the foreign agent and the home agent, this is an admission that it does not use an IP network separate from the cellular network, but instead merely tunnels an IP connection (presumably) through the cellular network that connects the foreign agent and the home agent. Consequently, there is only the one cellular network and not a separate IP network.

Neither Sicher nor Frid disclose messages being transmitted between a home agent and a handoff server using an IP network separate from the cellular network

With regard to Applicants' independent claim 6, the cited portions of Sicher and Frid do not describe the combination of a handoff server that communicates with a mobile telephone via a base transceiver station, wherein the handoff server communicates with the base transceiver station using a cellular network interface, and a home agent that communicates with the handoff server for transmitting messages using an internet-protocol network separate from the cellular network, wherein messages are transmitted using the internet protocol network between the home agent and the handoff server, and messages are transmitted using the cellular network interface between the handoff server and the base transceiver station.

The Office Action asserts that, incorporating the rejection of claims 1 and 12, Sicher in view of Frid discloses each limitation of claim 6, as outlined in the rejection of claims 1 and 12, except that the Office Action also asserts that "router" (MSC) is a "handoff server." The Office Action further asserts that Sicher in view of Frid discloses that the MSC is involved in the handoff, at col. 7, lines 51-60 of Frid.

However, col. 7, lines 51-60 of Frid indicates that the home agent and handoff server do not use an internet-protocol network separate from the cellular network:

Frid: Col. 7, lines 51-60 (actually, lines 47-60)

As described above, the mobile station 20 traveling within a particular geographic area requests packet communication by transmitting a packet communication request 400 towards the serving BS1 30. The BS1 30 relays the request 410 to the connected VMSC1 40. The VMSC1 40 determines that this request is associated with packet data communication and establishes an IP communication link 420 with the foreign agent/serving router (FA/SR1) 310 serving that particular geographic area. As a result, a Point-to-Point Protocol (PPP) connection is established between the mobile station 20 and the FA/SRI 310. The FA/SRI 310 then communicates with a home agent (HA) 320 associated with the traveling mobile station 20 and effectuates an IP tunnel 440 therebetween. Packet data delivery 450 over the IP tunnel 440 is thereafter effectuated.

As noted above, when Frid describes setting up an "IP tunnel" between the home agent and handoff server, this is an admission that it does not use an IP network separate from the cellular network, but instead merely tunnels an IP connection through the cellular network that connects the foreign agent and the home agent. Consequently, there is only the one cellular network and not a separate IP network.

Olkkonen does not overcome the deficiencies of Sicher or Frid

Olkkonen does not overcome these deficiencies of Sicher and Frid. Recall that Olkkonen was cited only against Applicants' dependent claims, and only for teaching the use of ATM in cellular telephony. Thus, even when combined, Sicher, Frid and Olkkonen do not teach all the elements of Applicants' claims.

Summary

The various elements of Applicants' claimed invention together provide operational advantages over Sicher, Frid and Olkkonen. In addition, Applicants' invention solves problems not recognized by Sicher, Frid and Olkkonen.

Thus, Applicants' attorney submits that independent claims 1, 6, and 12 are allowable over the references. Further, dependent claims 2-5 and 7-11 are submitted to be allowable over the references in the same manner, because they are dependent on independent claims 1, 6, and 12, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-5 and 7-11 recite additional novel elements not shown by the references.

III. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

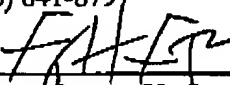
Respectfully submitted,

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Date: July 11, 2006

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